



BANISH THE BROADBAND BLUES

If you're not getting the speed of broadband that you paid for or if fair usage policies are throttling your enjoyment, don't panic – Davey Winder is here to help

We've all become addicted to broadband and its lightning-fast connections, enjoying streaming video and large file downloads.

While it's a vast improvement over dial-up connections, though, there's always something to spoil our enjoyment. Whether it's fair-usage policies capping our data or slow connection speeds meaning we're not getting the service we're paying for, broadband isn't always as much fun as we'd hoped.

Fortunately, we're here to help. We've been investigating the problems and looking for ways to solve them. We're also launching the UK's biggest ISP survey so we can find out who offers

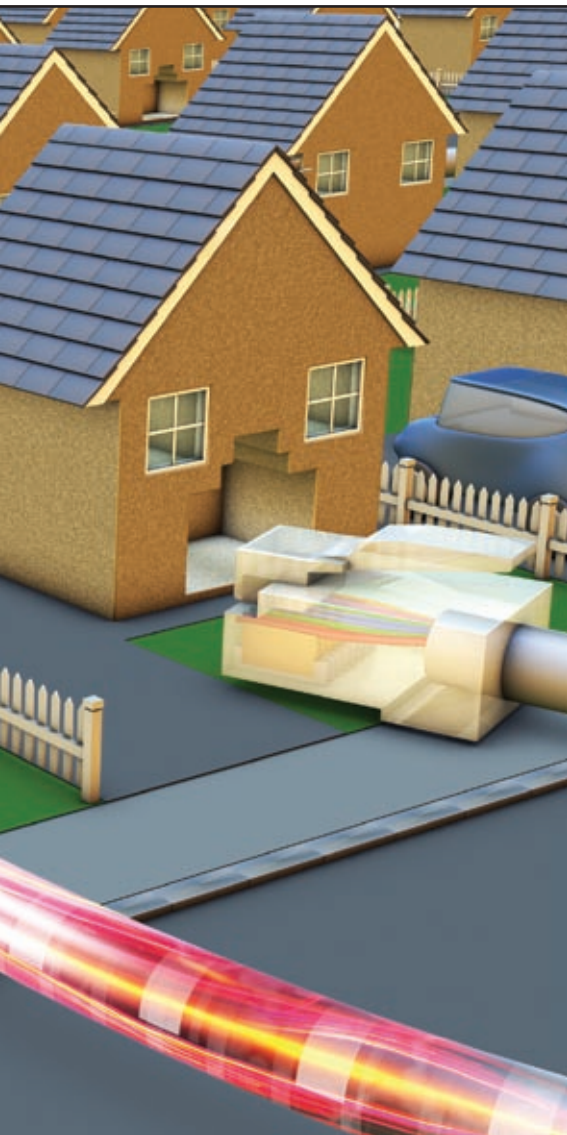
the best service in the country, and we'll be revealing all in a couple of months.

THE NEED FOR SPEED

Although it would be nice to think that the quality of technical support and reputation for customer service would be high on the list of priorities when choosing a broadband supplier, all most of us care about is the double whammy of price and speed. However, assuming that the promised 8Mbit/s download speed painted large in the advertising is what you will actually get can be a costly mistake. Look more carefully and you'll see that this figure is actually an 'up to' speed, and what you really get could differ.

There are many different reasons why your broadband doesn't live up to the speed that was promised, and we'll discuss these in turn. Once you understand the issues, our valuable advice at the end of this feature will help you diagnose and correct problems.

What you see advertised is a theoretical maximum. Industry watchdog Ofcom (www.ofcom.org.uk) suggests that the average broadband speed in the UK for 8Mbit/s ADSL services is actually only 4.6Mbit/s. It gets worse, and slower, in the real world. Follow our 'How To...' on page 130 to test your internet connection and you'll probably find that you're getting significantly slower speeds than you're



paying for. This is because your broadband speed is affected by a number of factors, including how far away from the exchange your house is and how old the physical wiring is.

Before you believe the advertising and switch ISP to get a super-fast broadband connection, it's worth checking your telephone line to see what speed it is actually capable of supporting. The telephone line is the most crucial part of your broadband connection, and something of an immovable barrier. If you've got old cabling that won't support faster speeds, there's not much you can do about it as you'll have a hard job convincing your line provider to replace the cable. To check the maximum speed that your telephone line supports, you can use BT's ADSL broadband availability checker (www.adslchecker.bt.com/pls/adsl). By entering your telephone number you'll get a quick report on the quality of your telephone line and a maximum supported download speed for ADSL and ADSL Max.

ADSL Max supports download speeds of up to 8Mbit/s and uses Rate Adaptive ADSL to deliver your broadband. This works by remotely interrogating your ADSL modem for a period of 10 days after the connection has been activated to negotiate the Maximum Sustainable Rate (MSR) achievable. It will start with the fastest, 8Mbit/s, but negotiate downwards until it finds a stable connection speed. This means that a

ISPs exposed Have your say

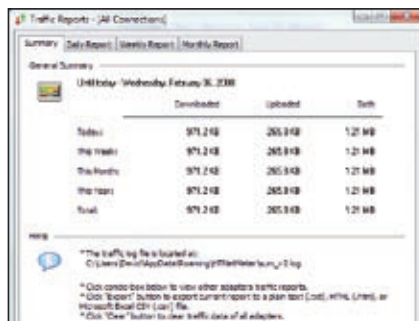
Computer Shopper is launching the UK's biggest survey of broadband suppliers, and we need your help to find out what broadband is really like across the country. All we need you to do is fill out our five-minute survey online at www.realbroadbandspeed.co.uk and you'll also be in with a chance of winning a fantastic Mesh laptop worth £600.

The survey focuses on your experiences with your existing ISP, so that we can find out first-hand how they all compare. As part of this survey, we're asking you to speed-test your connection using www.speedtest.net.



For a step-by-step guide to doing this, see page 130.

The results will enable us to see which ISP provides the fastest speeds and the best service. The survey closes on 1st May 2008. We'll be revealing the results in issue 247, so make sure you get hold of a copy to find out who the UK's best ISP is, as voted for and tested by the UK's internet users.



▲ Net Meter can monitor your broadband connection so that you can see how much data you download and choose a package accordingly

real-world maximum of 7Mbit/s could end up as low as 256Kbit/s, which starts to feel more like dial-up than broadband.

If your telephone line checks out properly, or you're using cable broadband from Virgin Media and, therefore, are using dedicated fibre-optic cables, other factors can affect your speed. The contention ratio of your connection plays a significant part. A ratio of 50:1 means you share your connection with a maximum of 49 other users, which is fine unless they are all online simultaneously streaming video. The more people sharing the bandwidth, the less you get and the slower your broadband becomes.

(UN)FAIR USAGE POLICY

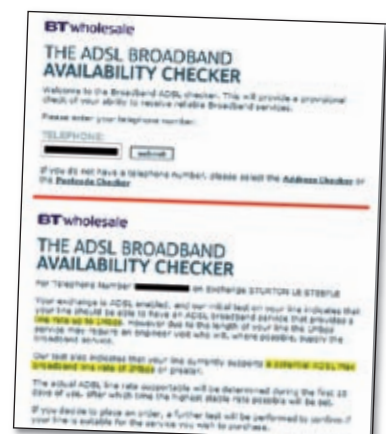
The amount of data that you download has a significant impact on your broadband speed. With each broadband package, you're assigned a download limit. Exceeding this can either cost you money or result in a slower broadband connection. If you've gone for an unlimited account, you may think that you're safe from these concerns, but you're not. The reality is that all unlimited packages are subject to a fair usage policy (FUP), which is anything but straightforward and fair. We found such FUP disclaimers as "excessive online behaviour may result in termination of customer accounts without notice" and "very heavy users may have their bandwidth restricted during peak time", or even "usage not at a reasonable level may lead to disconnection of service". Unfortunately, quantifying what is excessive, very heavy or not reasonable is not made clear.

You can't blame the ISPs for wanting to cap broadband usage for fixed and unlimited accounts. After all, they have only a finite amount of bandwidth capacity, and it costs money to provide it. If usage truly were

unlimited, the network would become clogged within a very short period of time as users soaked up the available bandwidth. Adding more capacity costs money and that cost would have to be passed on by way of higher subscription fees and would quickly be used up anyway. BT Wholesale, which provides the majority of raw broadband supply to the ISPs, switched from billing by numbers of users or total amount of data moved around to a system based upon capacity in 2004. This means that ISPs are charged by the amount of data that can be carried every second, and it has led to ISPs needing to control customer usage in order to keep costs down.

The ISPs use traffic-shaping tools to spot what they regard as abnormal data traffic, where there is continuous use of the full line capacity over an extended period of time, such as might be experienced when using a file-sharing service. The bandwidth management system reacts to this and 'shapes' traffic flow by reducing the available bandwidth, resulting in a dramatic slowdown for the user.

Soft-capping is another method applied behind the scenes to shape traffic flow and works by prioritising based upon application: online gaming and internet telephone calls sit higher up the data transfer queue than web surfing and email, while file-sharing users sit at the back. If the network is quiet, then P2P users won't notice a slowdown; when it is busy, they will. Customers who have gone over any monthly download limit are sent to the back of the queue. Some ISPs will charge extra for data once you go over your cap, so make sure you



▲ BT's ADSL broadband availability checker gives you a quick overview of the speed your telephone line supports



Calculate your likely Broadband usage

BT Bringing it all together

Use this handy calculator to get an idea of how much you're likely to use broadband each month.

How many hours will you surf the net **per week**? [more info](#)

How many emails will you send and receive in an **average week**? [more info](#)

How many emails with attachments will you receive in an **average week**? [more info](#)

How many jpegs and photos will you receive **per week**? [more info](#)

How many music tracks will you download **per week**? [more info](#)

How many minutes of videos or trailers will you watch **per week**? [more info](#)

How many movies will you download **per month**? [more info](#)

How many hours **per week** will you listen to online radio? [more info](#)

How many hours **per week** will you game online? [more info](#)

How many hours **per week** will you make calls through the internet? [more info](#)

30 hours

200 emails

35 emails

10 photos

15 tracks

30 minutes

1 movie

2 hours

10 hours

2 hours

Based on your answers, we recommend

Your estimated total usage

BT Total Broadband Option 2 [find out more](#)

5.0 GB

▲ Work out your likely broadband usage so you can choose the right package for your needs

know how your ISP handles this, as most people will probably prefer a slower service to an unexpected bill.

The first most users know about any fair usage policy, despite agreeing to it when signing up to their broadband contract, is when an email arrives saying 'Your broadband internet usage has been highlighted as exceptionally high and is affecting the service we provide to other customers. If you do not reduce your usage, we reserve the right to terminate your service as explained in our fair use policy.' We have discovered that for most ISPs the 'excessive use' hurdle is set no higher than 30-40GB per month, and for many companies it is considerably lower.

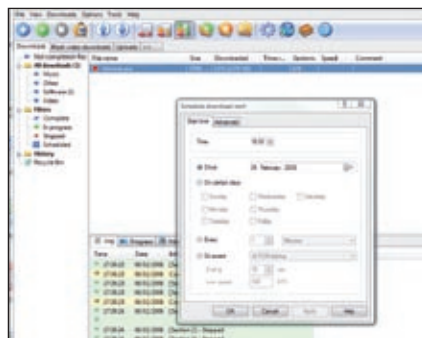
Our advice is to check your ISP's FUP and read the small print carefully. Make sure you know how much data you can download in a month and what happens if you exceed this limit. To check if you're on the right package, there are several tools that you can use. BT's Broadband Usage Calculator (www2.bt.com/static/i/btetail/consumer/broadbandusage) lets you work out roughly how much bandwidth you'll need based on your typical usage. Alternatively, if you use Net Meter (www.hootech.com/NetMeter) for a month, you can monitor your actual usage.

If you find that your usage exceeds your bandwidth cap or FUP, you'll need to upgrade your account or switch provider (we provide full details on how to do this later on).

Alternatively, if your ISP allows for unlimited downloads during off-peak hours, you can make good use of this by queuing your downloads for these times using the Free Download Manager utility (www.freedownloadmanager.org).

FIXING THE PROBLEM

Now we know what can cause problems with broadband connections, what can we do about it? The first step for ADSL users is to use BT's Broadband Availability Checker (www.adslchecker.bt.com/pls/adsl). This will give you an idea of the speed of broadband that your line will support. If it's lower than the speed you're paying for, try phoning BT and asking for advice. Ultimately, you may need to switch



▲ The Free Download Manager lets you schedule downloads so you can take advantage of any unmetered times offered by your ISP

supplier to Virgin Media, because cable broadband doesn't have this problem, although that doesn't guarantee fast speeds.

Next, for ADSL and cable connections run a speed test using www.speedtest.net (see 'How to... Speed-test your broadband connection' on page 130). This will give you a real-world download speed for your internet connection. If it's close to the speed you're paying for, you can relax, as your broadband is fine. If it's a lot slower than you expected, there are some things you can try. First, try running the test again at different times of the day; it may just be that you get slow speeds during peak hours, as your ISP doesn't have enough bandwidth.

Don't forget, your connection to the router could be playing a big part in this. While wireless is convenient, it isn't as consistent as cable. If your computer sits on a desk next to your router, connect the two with a good-quality Cat5 Ethernet cable and the stability and speed of your connection should improve.

Don't ignore the router itself, either. Check that it has the latest firmware upgrades by going to the same web interface that was used to configure it in the first place and looking for an upgrade option. Try and turn your router or modem off for an hour or so, as turning it back on will force it to resynchronise with your ISP. This might help improve speeds where the system has negotiated a relatively slow rate due to something such as line noise, which may have since been fixed.

If this isn't the case, don't rule out a cabling problem. Performing some simple diagnostics can help. For ADSL connections, remove everything from the phone line. Plug your ADSL micro-filter and modem or router into the master phone socket (not an extension) and run the test again. If you get better results, move the modem or router back to its initial position and test again to see if it's your phone extension



▲ Performing an automated line test can help you diagnose a problem with your broadband connection

Switching off Changing your ISP

Despite Ofcom's efforts, changing your ISP can be difficult. New regulations introduced in February 2007 require your ISP to give a Migrations Authorisations Code (MAC). This enables you to switch your broadband supply from one provider to another. However, some ISPs will still try and tell you that they can only release the MAC code when you have completed your contract term and paid the escape fees. Ofcom requires them to comply at once, with contractual matters

handled separately. Unfortunately, reporting rogue ISPs to the ombudsman is riddled with complexity. You first have to complain to your ISP, then wait 12 weeks, then get the Office of the Telecoms Ombudsman involved and then wait until it decides how to resolve the matter.

Things can be more complicated if you have opted to get your broadband from a company that comes under the Local Loop Unbundling (LLU) umbrella. This means that they have installed their own equipment in the exchange

rather than using the BT defaults, but it also means that MAC codes often don't apply. The real problems start if you want to leave a LLU broadband service and go back to a BT Wholesale delivered one, because the LLU product will involve charges of £60 by way of a 'cease and reprovide' clause, and often take a month to complete. It's often far better to make sure you are getting the best out of your existing service before even considering a change.

Tomorrow's world The future of broadband

It's easy to get the broadband blues when you compare your 'up to 8Mbit/s' service delivering less than half of that with folk in Tokyo or Seoul enjoying true 100Mbit/s speeds. However, the future is looking rosier for the UK. BT Openreach (www.openreach.co.uk) will start installing a network of super-fast fibre connections capable of 100Mbit/s speeds this summer. Only the 10,000 new homes in a development at Ebbsfleet in Kent will benefit from the trial of what will be the UK's fastest ever residential broadband network, but it's a start. The basic fibre infrastructure will replace the copper lines that hamstring connectivity elsewhere, and will make this available to ISPs to sell on. ISPs are likely to be charged around £530 per year per 100Mbit/s line (£44 per month), but it will be up to the ISP itself how that translates into subscription fees for the end user.

Dark-fibre specialist H2O (www.h2o-networks.uk.net) is also working on delivering 100Mbit/s broadband via fibre directly to the consumer, bypassing the

telephone network entirely and instead using some of the 360,000 miles of the country's sewers as the conduit. Because no digging is required, the fibre can be deployed more quickly (four hours instead of a year to cover a 2km area, according to H2O) and at less cost. While BT has warned that the cost of digging up roads nationwide to replace existing broadband cabling could be as high as £15bn, H2O reckons it could cut the cost by 75 per cent. It looks like Bournemouth, Dundee and Northampton will be the first to experience broadband via the sewers, but not for around 18 months or so yet.

Finally, there is Worldwide Interoperability for Microwave Access technology, better known as WiMAX. This is designed to provide wireless data at high speeds over long distances. WiMAX uses a number of different methods to achieve this, but the end result is the same: an alternative to cable or ADSL.

Unlike WiFi, which has a relatively short range – as anyone who has tried to use their laptop at the bottom of the garden will testify – WiMAX can sustain a connection over many



▲ Previously a broadband black-spot, Milton Keynes is joining the high-speed internet revolution with the UK's first WiMAX roll-out

kilometres. As with all wireless connections, the further away you get from the base station, the slower the transfer speeds get. Theoretically speeds of 70Mbit/s are possible at a distance of 50km. The first UK commercial service (www.freedom4.com) has just launched in the Milton Keynes area, where traditional broadband is impossible to get, although it currently only supports a maximum of 2Mbit/s for £25 per month.

cable causing problems. You may need to replace the cabling if this is the problem. If not, plug all your phones back in one at a time until you find the problem.

SOCKET TO 'EM

If you didn't get a faster transfer rate by unplugging everything, unscrew the faceplate from your main socket to access the BT test socket (https://www2.bt.com/static/i/media/pdf/repair_guide.pdf). Plug the ADSL micro-filter into the test socket and test again. If this solves your problem, phone BT and ask for a new socket; otherwise, try replacing the micro-filter (around £3.50 from www.misco.co.uk).

If that doesn't solve the problem, there's still something you can try. Perform a line test using the BT engineers' 'quiet test' by dialling 17070 and choosing option 2. If you hear any noise, such as crackling, you have a problem. Visit www.bt.com and initiate an automated line

noise test. This will confirm if a problem is found and get the engineers on the case for you.

This should solve the problem, unless you are unlucky enough to have 'up to 8Mbit/s ADSL Max' broadband and you are using a router with an AR7 chipset (routers that use this chipset are listed at www.linux-mips.org/wiki/AR7).

Routers that use this chipset can be the cause of the problem, and calling a BT engineer out would result in a fee of £170, as the fault is your own. Thompson SpeedTouch routers don't use this chipset, so are safe to use if you think you've got this problem.

If you've got cable broadband, cabling is less likely to be a problem, but the wiring in your home can still cause trouble. If you've noticed that your digital TV service, if installed, isn't working properly, then your broadband could be suffering, too. Unfortunately, Virgin Media doesn't want to let people play around with its cabling, so you'll need to phone for technical

support if you're not getting the line speed that you're paying for.

TELL US MORE

In the end, problems may simply be down to your ISP not being very good, not providing you with the technical support you need or simply throttling your connection because it's at full capacity. At this stage it's tempting to switch ISP (see the box opposite for more information), but choosing the right one can be difficult, which is why we need your help to find out who the best UK ISPs are. All you need to do is visit www.realbroadbandspeed.co.uk and fill in our quick five-minute survey (see the box on page 127 for more information). We just need to know what speed broadband you're paying for, the actual speed as tested with www.speedtest.net and what you think of your current ISP. We'll be revealing the results in a couple of months' time, so you'll be able to switch to the fastest ISP.



▲ Speed-testing your internet connection lets you find out if you're getting the service you're paying for

► Upgrading your router can sometimes fix problems



▲ Cable internet doesn't use your phone line, so you might get faster downloads by using it



HOW TO...

Speed-test your broadband connection

There's only one way to find out if you're getting the broadband you're paying for: speed-test it. David Ludlow shows you how to use SpeedTest.net

It can be hard when you're browsing the internet to work out if you're getting anywhere near the speed of broadband that you're paying for. It's easy enough to test, though, with dedicated speed-testing websites. We use www.speedtest.net, as it's got lots of test servers, making it an accurate test of your download speed. Here we'll show you how to use this free service, so you can see how fast your broadband connection really is.

Don't forget to tell us how quick your connection is by completing our online survey at www.realbroadbandspeed.co.uk. It will take just five minutes and give you the chance to tell us how good your broadband provider really is.

1 Before you start, it's important to iron out any problems that may slow down your test. A slow wireless network could make it look as though your broadband is running slower than it is. For that reason, it's best to test your connection from a PC that's directly plugged into the router via a cable. If it's not close to hand, then move your PC or laptop to the router, if possible, and plug it in. If you can't do this, then move your wireless PC or laptop as close to the router as you can get so that you get the strongest signal and best throughputs.

No matter what connection you're using, make sure that nobody in your house is using the internet, particularly for downloading large files. If they are, this will skew your results and make your broadband connection look worse than it is.

2 Open your web browser and visit www.speedtest.net. You'll be taken to the SpeedTest.net website, which should zoom into a map of where you live, highlighting a pyramid in gold. This pyramid is the recommended server that you should use to test your connection. It works this information out by using your computer's Internet Protocol (IP) address, which is its unique address on the internet. This tells SpeedTest.net which ISP you're using and, therefore, where you're located.

UK users should have a yellow pyramid in the UK highlighted. If this is the case, click on Test Using Recommended Server next to the spinning yellow pyramid, and skip to Step 4.

3 If SpeedTest.net failed to identify which server you should be using to test, you'll have to do the job manually. This isn't difficult. Hover your mouse over a blue pyramid, and a dialog box will appear telling you which city and country the test server is in. Hover the mouse over the London server in the UK (the middle of the three pyramids in England) and click it with the left mouse button.

4 SpeedTest.net now tests your connection using a few different tests. First it will test your connection's Ping speed. This is how quick your connection is to respond; the lower the time here, the better for playing games.

Next an automated download test takes place. This downloads a file from the test server

and times how long it takes to happen. Finally, an upload test takes place. This times how long it takes to send a file to the server in question. When the test has finished, you'll automatically be redirected to the results page.

5 Your speed test results are displayed on the next page. The most important statistics are located in the top left of the screen. If you're taking part in our broadband survey at www.realbroadbandspeed.co.uk, the download speed is the figure that you should type into the survey. This is also the figure that you should compare to the broadband speed that you're paying for. SpeedTest.net presents this figure in Kbit/s, but to get the Mbit/s figure that broadband suppliers use, just divide it by 1,000. So, 2,344Kbit/s is 2.34Mbit/s.

If this figure is the same as or very close to the service you're paying for, you're doing well; if it's significantly slower, you're not getting the speed you're paying for.

6 Once you've got your results, you can click Test Again to try the speed test again. It might be worth trying at a different time of day to see if slow speeds were caused by peak times during the day. You can also browse other results by clicking the 'Compare your results to others' option. This will bring up a list of your previous tests, but clicking on My Summary and Global Stats will let you compare your broadband speeds to other people's results. **CS**

